36/3 October 1970

SOIL conservation

Plants and man

Soil Conservation Service
U.S. Department of Agriculture

KUM

SOIL
conservation

October 1970, Vol. 36, No. 3

On the grow . . .

Plants, long a workhorse in soil and water conservation, are showing new uses and new values—and SCS is finding new ways to help plants do their many jobs.

In the world of grass, SCS range conservationists put useful facts in a computer to better aid landowners (p. 51). Grasses serve to heal Nevada fire scars (p. 62) and treat wastes at home in Wisconsin (p. 63) and at a cannery in Texas (p. 54).

Trees, once thought of only as timber, serve to regulate the environment (p. 56); mend wornout farmland in Michigan (p. 57) and Illinois (p. 58); and help man in many ways (p. 59).

Even the peanut gets in the conservation act, protecting roadbanks in Hawaii (p. 53).

Check Administrator Grant's editorial (p. 71) for some cogent comments about the role of these and other plants in the big assignment of resource conservation and environmental improvement.

COVER: A picture of a pond—but note how trees and shrubs also help in making this Vermont home a picturesque landscape.

51 **Computer reads the range**
By Thomas N. Shiflet

53 **Peanut cuts roadside erosion**

54 **Land and plant cover solve waste problem**
By Marshall H. Nichols

56 **Trees—regulator of the environment**
By Jacques J. Pinkard

57 **Trees put farms back on tax rolls**
By Henry Dierking

58 **Forest planted long ago a conservation landmark**
By William M. Clark

59 **Trees are for people**
By Carrow T. Prout, Jr.

62 **Grass and teamwork heal fire scars**
By J. Boyd Price and William L. Dunning

63 **Mound systems aid in sewage disposal**

64 **Conservation in action**
Wood crop, Kansas; mechanical spillway, Nebraska; gullies stabilized, Michigan; community conservation, Ohio; golf course, New York; Indian lakes, Wisconsin; hunter's paradise, Tennessee

67 **Meetings**

68 **Review**

70 **Recon**

71 **From the Administrator**
Putting plants to work

72 **A home in the woods**

Prepared in the Division of Information, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250

CLIFFORD M. HARDIN, Secretary of Agriculture
KENNETH E. GRANT, Administrator, Soil Conservation Service
BEN O. OSBORN, Editor
GEORGIE A. KELLER, Production Editor

SOIL CONSERVATION is the official magazine of the Soil Conservation Service, published monthly by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. Use of funds for printing this publication approved by the Director of the Bureau of the Budget July 17, 1968.
Reprint permission: Contents of this magazine may be reprinted without special permission. Credit is not required but is appreciated. Photos available on request.
Commercial names: Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the Department of Agriculture.
Subscription: $2.50 per year, $3.25 foreign. Single copy 20 cents. Discount of 25 percent on orders of 100 or more sent to same address. Order direct from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Computer reads the range

By Thomas N. Shiflet
Range conservationist, SCS, Lincoln, Nebr.

Computer management of rangeland? Ridiculous? Not at all —at least when you know how it works.

In 1967, the Soil Conservation Service began work on a computer system that would enable it to give more efficient help to range owners and operators cooperating with conservation districts.

The system is the Range Data System—RDS. It is closely akin to automated systems in other disciplines such as woodlands and soils.

When it is complete, the RDS will be made up of several parts or subsystems. These will include production and composition data by plant species from soil taxonomic units, brush-control data, and, possibly, runoff and soil loss information.

Most of the effort so far has been put into developing the part dealing with plant production and composition. Information gathered is on a standard form. The information can be key punched directly from the form and fed into the computer. The machine digests and reduces the data to the desired form and values and sets them for storage in

SCS range conservationist (above) clips range vegetation on an ungrazed site. Facts about plant kinds and weight of growth will be recorded on a form (right) that can be read into the computer "data bank."

SCS-RANGE-417 Rev. 6-69 (File Code RANGE-12) — PLANT YIELD RECORD for RANGELAND, GRAZABLE WOODLAND, AND NATIVE PASTURE — U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

SOIL BROAD CB L LRA ZB STATE UTAH CO BOX ELDER LOCATION MAP 24 KIND OF LAND 1 PRECIP ____ ELEV ____

EXPOSURE NE SLOPE 8 USE HISTORY 2 SEASON OF USE 13 KIND OF ANIMALS CSD BURNING 2 BRUSH CONTROL 4

RANGE COND 99 CANOPY - DATE 6/21/66 GROWING SEASON 3 WEIGHTS: (1) Fresh, 2-A-Dry, 3-O-Dry (Circle One) CONV FAC 10

SOIL SURVEY SAMPLE NO. - PLOT SIZE & SHAPE 9.6C / -

PLANT NAME (1)	PLANT SYMBOL (2)	PLANT CHAR (3)	Estimated or Clipped Weight Per Species Circle Plots That Were Clipped P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10	WT CLIPPED PLOTS FRH (4)	CLIP (5)	DRY (6)	PCP (744) (7)	% DRY WT (8)	WT ALL PLOTS (9)	AVG YIELD (10)	PCT COMP (11)
BLUEBUNCH WHEAT	AGSP	PNG	140	150	150	210	180	160	270	260	200	210	530	376	494		79		150	89
SANDBERG BLUEGR.	POSE	PNG	1	1	2	5	1	1	1	3	1	1	2	2	2		100		17	1
BOTTLEBRUSH	BASA	PNF	20	2	3	-	10	2	-	26	34	-	22	22	12		55		46	3
VETCH	VICIA	PNF	1	5	10	-	1	1	-	2	-	-	2	4	2		50		20	1
PENSTEMON	PENTS	PNF	-	3	2	3	-	-	-	-	-	1	-	-	-		30		6	-
YARROW	ACLA	PNF	-	-	-	-	40	2	-	-	-	-	12	12	7		56		9	-
YELLOWBRUSH	CHVI	NS	25	10	-	-	-	10	-	1	-	5	31	34	15		44		22	1
BIG SAGEBRUSH	ARTR	NS	-	-	-	-	-	80	-	100	-	-	60	61	30		49		67	4

The Range Data System will help SCS range specialists and landowners plan best use and treatment of sites such as this excellent range in the Pedernales Conservation District in Texas.

a national "data bank."

Each stored data set will consist of several plots of production and plant-composition data by species or groups of species on one soil taxonomic unit, along with:

(1) Locator data—state, county, major land-resource area, and state plane coordinates of the sample area where the data were collected.

(2) Environmental data — average annual rainfall, elevation above sea level, exposure, slope, grazing history, and other items that have a direct influence on productivity and species composition.

These data are collected at field locations. SCS state office personnel check and edit them before they are forwarded to the data center at the Midwest Regional Technical Service Center, Lincoln, Nebr. This method assures that only high-quality data will be "deposited" into the bank.

Eventually the data bank will contain thousands of such data sets and provide a core for designing resource inventories on rangelands. It will include considerable data already on hand that have been collected over 14 years by the Soil-Range Interpretation Team. The bank itself will be started as soon as compilation of the National List of Scientific Names is completed, and permanent symbols for all plants have been chosen.

The data bank will be extremely helpful to SCS in improving technical competence in range-conservation planning and application work. Many computer programs will be developed to utilize the stored information.

An important use will be improvement and strengthening of work-unit technical guides. The grouping of two or more soils in a single range site for management purposes can be tested. The stored data on the soils in question can be retrieved from the data bank and analyzed to see if the soils do produce the same kind, proportion, and amount of vegetation. Likewise, trends in range improvement or deterioration will be better documented, giving field personnel better information on which to "read the range."

The system will enable SCS to better correlate range sites across state and administrative boundaries by retrieving and analyzing the data from any geographical area.

Status reports generated from the system will show which soils lack data and will provide a basis for scheduling by field personnel to get this information.

Use of the RDS will not be limited to rangelands. Many other practical and scientific uses can be made of it. Much of the information recorded and stored will be useful in such areas as wildlife habitat, hydrology, soil correlation, recreation, and others. Data now being collected on grazable woodlands and native pastures will be stored and used in a similar manner.

The RDS is being developed in close coordination with systems of other disciplines in the SCS Management Information System so data can be freely exchanged. For example, if a soil profile description, site-index data, and grazable-woodland production data are collected from the same sample area, this will be noted in each data system. The information from each system could be recalled, combined, and analyzed if needed to study a particular problem.

No range can be managed by computer alone. Onsite assistance of a competent conservationist and effort by the conservation district cooperator remain vital. The computer can, however, help that conservationist improve the quality and efficiency of the assistance he gives the cooperator. ♦

XUM

Peanut cuts roadside erosion

The peanut, although not common to Hawaii, is becoming a popular plant on the island of Maui. But its value isn't in gracing Hawaiian nut bowls.

The versatile plant is showing promise for roadside stabilization and beautification along Maui highways. It is one of several plants suggested for erosion control and beautification by the Soil Conservation Service.

When the Central Maui Soil and Water Conservation District received a request from the Hawaii Division of Highways to help select erosion-control plants, the district turned to SCS.

The SCS Plant Materials Center on Maui had been testing various types of peanut plants for about 6 years, Center Manager Earl Lewis reported. Specialists at the center selected five kinds of peanuts to combine with two types of grasses on a trial site that had been suffering erosion damage. The site is a cut along Kaahumanu Avenue, the island's busiest thoroughfare.

Both grasses have become well established on the test site, and the peanuts have produced strong runners, according to Lewis.

With irrigation and fertilization, the plants can be expected to develop a solid mat of roots and leaves for an attractive and protective cover. Showy yellow blossoms grace several of the peanut varieties —but the perennial plants do not produce an "eating-size" peanut.

SCS provided plants and technical help. The Division of Highways is furnishing other materials and maintenance.—ARNOLD NOWOTNY, *district conservationist, SCS, Phoenix, Ariz., formerly at Wailuku, Hawaii.* ♦

The peanut's matted root system and strong runners give it promise as a conservation plant.

A bank along Maui's main highway, center, was a raw, sediment-producing eyesore. At right, PMC Manager Earl Lewis checks growth of peanut-and-grass planting that will protect the bank.

Land and plant cover solve waste problem

By Marshall H. Nichols
District conservationist, SCS, Paris, Tex.

A soup canning company in Paris, Tex., has used soil and plant cover to solve an out-sized pollution problem.

The company processes up to 3.6 million gallons of waste water a day through a system which combines perennial vegetation, diversion terraces, grassed waterways, grade-stabilization structures, and overhead irrigation sprinklers.

The water that flows from the treatment area, the company reports, is clean and clear.

In 1960 the Campbell Soup Company bought 600 acres at the edge of the city for a plant site. A factor in the location was suitability of the site for an industrial waste-disposal system. The city's treatment facilities could not handle the volume of waste water the plant would produce from washing vegetables.

The Lamar County Chamber of Commerce asked the Soil Conservation Service for help in locating possible sites where soil permeability rates were greatest. Soils of all possible sites were evaluated by SCS soil scientists. But other factors—nearness to railroads, accessibility, and drainage—limited possible sites to soils with slow permeability rates.

Soils at the site selected by the company rated very low in permeability—0.05 inch an hour. This made it impossible to filter the waste water by soil percolation. This factor also causes soils to be more susceptible to erosion during heavy rains. The addition of waste water daily would surely intensify the erosion hazard and produce tons of sediment and pollution in the main streams of the watershed if something wasn't done.

The site was mostly old eroded cropland with soils low in fertility. Low-quality grasses, native shrubs, and small post oaks had taken over the open field areas. Gullies were still active 20 to 30 years after cultivation was stopped and were too deep to cross.

A study was made of adapted plants first. The vegetation planned had to provide a cover suitable for filtering the large volume of waste water, while handling 44 inches of annual rainfall on soils which could soak up only 0.05 inch an hour. And the cover had to work the year around.

Land clearing, land smoothing, revegetation, waterway shaping, terraces, and mechanical structures were planned to stabilize gullies and control erosion.

In September 1960, contractors began preparing the land for purifying waste water by allowing the water to flow over grass. This is the "overland flow method." Land was cleared, gullies filled, waterways and drop structures installed, and slopes carefully landplaned. The slopes were smoothed to assure uniform flow of water at a rate that would allow waste particles to be filtered out by vegetation. The terraces were laid out in 1963 to intercept the water after it had been filtered, then to conduct it to the grassed waterways, and divert it from other filter strip areas below.

The area was seeded to reed

Dominant stand of reed canarygrass that filters Campbell plant waste (above). The author, right, and Gus Harris, Jr., of Campbell Soup check growth of reed canarygrass, tall fescue, and other grasses. Sprinklers in background operate 5 to 8 hours a day all year long.

XUM

canarygrass, redtop bentgrass, and tall fescue, all northern species requiring high fertility. Bermudagrass was rejected because of its long winter dormancy. Some bermudagrass was used, however, to sod plant the waterways and was then overseeded with the northern grasses more tolerant to water.

In periods of dry weather before the spray system was used, the grasses were maintained by supplemental irrigation. Complete commercial fertilizers were applied. In the area where the subsoil was exposed, however, the cool-season northern species died; hardier native vegetation replaced them.

Waterways and grade-stabilization structures were designed by SCS engineers who also recommended size and spacing of diversion terraces.

When the processing plant began operation in the fall of 1964, the spray area had a good stand of mixed grasses with isolated areas of fescue and reed canarygrass. In sandy areas, a strong stand of bermudagrass was noted. Under tests with heavy application of waste water in winter 1964 and spring 1965, the bermudagrass deteriorated and turned black. By April it appeared to be dead, but 2 weeks after the tests stopped, new growth appeared. Waste-water applications were resumed and continued throughout 1965 without detrimental effects to the bermudagrass.

Near the end of fall 1965, cool weather slowed the growth of native plants, and the cool-season northern species began to flourish.

After extremely wet seasons in the winter and spring of 1968 and 1969, it was evident that native grasses cannot compete with reed canarygrass when plant nutrients are supplied in quantity from the decomposing organic matter in the waste water.

Louis C. Guilde, director of environmental engineering for the company, described the system to the 42d. annual conference of the Water Pollution Control Federation in October 1969. He said that in 1960, "the magnitude of the undertaking represented an unprecedented effort in soil reclamation and conservation, but experience indicated that the eventual land use efficiency would have been improved if the effort had been bolder."

The company won top national honors at the annual Sports Foundation, Inc., awards program in 1970 "for achievement in the control of water pollution."

Allyn C. Bennett, SCS engineering specialist, observed the system in operation in November 1969 and said, "it is apparent that this overland-flow method of waste disposal is highly successful." He believes that better land use could be achieved by a system of parallel terraces instead of the semiparallel diversion terraces. This would provide a uniform trickle-flow distance through vegetation. He predicted that principles of waste disposal learned from this operation will be used to improve the design of other waste-disposal systems.

"For example, the uniform trickle flow through vegetation is probably more beneficial than sprinkler spraying, which means that a gravity-flow system with more solids in the water would also work very well," Bennett said.

In the system, vegetable solids and grease are trapped or strained from the waste water, which is then run through an automatic sprinkler-irrigation system onto vegetated and terraced fields. Sprinkler laterals are below, or on the lower side, of each terrace. The sprinklers spray the wash water onto the land. Then it trickles through the vegetation down to the next terrace, then into a system of vegetated waterways. Grade-stabilization structures are located at the outlet of each of the two main waterways leaving the farm. The trickle-flow distance needed to adequately lower BOD (bio-chemical oxygen demand) at this plant is 200 feet or less. Uniform slopes with a minimum of ponded areas are more efficient.

Good-quality hay is harvested from the spray area. And regular removal of excess vegetation appears to boost efficiency of the disposal area. Guilde reported that, "the process also reclaims a high percentage of plant nutrients. These nutrients fertilize the grasses, and analysis of the hay showed the mineral content to be nearly double that found in other good-quality hay with high nutritional value ranging up to 23 percent crude protein. In feeding tests, cattle showed a definite preference for hay grown on the disposal sites."

There *is* a continuous streamflow downstream from the spray-area fields without the unsightly aquatic vegetation which would be expected from most waste-disposal areas.

An advantage of the system is its ability to function in all types of severe weather conditions without reduced efficiency. ♦

Trees—regulators of the environment

By Jacques J. Pinkard
Woodland conservationist, SCS, East Lansing, Mich.

Michigan windbreaks protect farmland from erosion and perform many other jobs.

What is a tree worth? You can get many answers, but the 375 million or more trees that have been planted by the soil conservation district cooperators in Michigan alone—on more than 400,000 acres—are an indication of the value people place on them.

Trees are essential to life on our planet. They moderate temperature and affect pollution, noise, wind, and water.

As trees grow, they provide a home for wildlife and products for our daily living. In old age, they are cut, and in their place is space for a new tree to grow.

The daily evaporation from a single well-watered tree can produce an estimated cooling effect of more than a million British thermal units. This is equal to 10 room-sized air conditioners operating 20 hours a day.

Because of the "greenhouse" effect of waste particles in polluted air, the air temperature may be 20° F. higher in urban settings than it is in nearby rural areas. This can be an important reason for having green space in cities.

Trees absorb polluted air and emit air richer in oxygen and somewhat freer of pollutants. A growth of 1 ton of wood releases at least 1.1 tons of oxygen and absorbs at least 1.5 tons of carbon dioxide. An assumed production level of a ton of wood per acre on ¼ billion acres a year shows the size of this natural working force.

It has been recognized that our oxygen reserve is being reduced by burning fossil fuels. Removal of large areas of plants—for people—is reducing the oxygen supply. It is thought that three-fourths of the conversion of carbon dioxide back to oxygen takes place in the ocean—but trees play an important part on the land.

Forests and rows or clumps of trees dampen city noise. Each 100 feet of forest is now believed capable of dissipating about 6 to 8 decibels of sound. This can be put in perspective by realizing that a human ear has the ability to detect 1 decibel, ordinary speech is at about 60 decibels, and the range of audibility is considered to be 130 decibels.

A windbreak provides full protection to an area 10 times its height and some protection for 20 times its height downwind. A 5-row windbreak 35 feet tall will reduce a 35 mile-an-hour wind in the lee 100 feet. The wind will have built up to only 15 m.p.h. in the lee 200 feet.

Fuel use in the home can be reduced 20 to 30 percent by properly located windbreaks. Livestock will gain faster and require less feed where protected by a windbreak. There will be better calving and lambing where stock is protected by windbreaks. Windbreaks in Michigan preventing sugar beets from blowing out are known to have saved $60 an acre in replanting and other costs. Where blowouts occur 3 years in 12, the benefits amount to $5 for every dollar spent. The gamble of being without adequate windbreaks is poor; a 2-row windbreak may be established at an annual cost of only $1.06 for each acre protected.

Tree cover, needles, and leaves protect the soil from the impact of raindrops. Trees protect the water supply by improving the filtering and holding capacity of the soil. Peak flows can be lowered. Surface runoff from hardwood forests protected from grazing is only about 5 percent of that from permanent meadow. Soil loss is only about 2½ percent.

Wildlife living space, food, and cover are provided by trees. Forest type, productivity, growth rate, trees per acre, age and size, extent of acreage, and other factors influence the value of various foods that the trees may provide.

Wild turkeys nest in thickets or fallen trees. Oak acorns make up one-half to two-thirds of the diet along with other nuts and seeds.

Mourning doves nest 15 or 20 feet up in trees (or shrubs) such as

XUM

elm, box elder, and soft maple. Doves eat Russian olive and red cedar berries.

Flickers and woodpeckers, sapsuckers, bluebirds, house wrens, and screech owls—to name a few—nest in hollow trunks or limbs.

Other nongame birds need clumps of cedar, spruce, pine, autumn olive, and other wildlife plants.

Hungarian partridges and other birds need windbreaks around crop fields.

Each day a 150-pound deer eats 10 to 12 pounds of oak, cherry, balsam, mountain ash, willow, beech, alder, maple, hemlock, white cedar, red maple, poplar, and other plants. A felled 4-inch cedar may provide 17 pounds of browse. When alive it may provide browse for many years.

A cottontail rabbit eats birch, maple, willow, dogwood, sumac, and others.

Tree squirrels den in holes in trees. Two or three trees of 15-inch diameter with a 4-inch-diameter hole at the 20-foot level are adequate to encourage the squirrel population. Squirrels eat their weight each week in berries, cherries, nuts, acorns, pine and maple seed and hazel nuts, and buds of elm, maple, Osage orange, and yellow poplar.

Ruffed grouse need woods openings. They eat juneberry, thornapple, mountain ash, cherry, alder, aspen, beech, birch, dogwood——400 or 500 kinds of plant flowers, buds, fruit, and leaves.

The worth of a tree goes far beyond the concepts of economics. Chlorophyll-bearing green plants make life possible for other organisms on earth. ♦

Trees put farms back on tax rolls

By Henry Dierking
District conservationist, SCS, Muskegon, Mich.

Thirty years ago the two newly formed soil conservation districts serving landowners of Muskegon County, Mich., set out to get trees on as much of the county's eroding, tax-delinquent and poorly producing acres as possible.

Critics said it wouldn't work. They insisted that the hand-planted seedlings would die and that so much of the county's area ought not to be in trees anyway.

The years have proved the district leaders right. Millions of trees planted in the program have been a useful conservation crop for many landowners on once eroding, submarginal farms; and they have produced numerous other benefits.

More and more farms in the county were becoming delinquent on the tax rolls when the district leaders decided that reforestation might reverse the trend. They began by establishing tree nurseries on the farms of Olaf Hostad, chairman of the South Muskegon District, and Hans Agard, chairman of the North Muskegon District.

Every year for many years each of the nurseries distributed a million healthy, vigorous tree seedlings to landowners.

Hostad, still an active district director, points out that the district nurseries played an important role in supplying tree stock to encourage people to reforest severely eroded fields, establish needed windbreaks, improve odd areas for wildlife food and cover, and beautify highway and recreation areas. Commercial growers now supply most of the stock for these purposes.

In all, about 35 million trees have been planted, 200 miles of windbreaks established, and 2,500 acres of wildlife habitat improved in the two districts.

Christmas trees, a byproduct of the reforestation drive at first, have become a useful and profitable crop. There are several hundred Christmas tree plantations in the districts, many of them on what was once wind-eroding, submarginal land.

These Norway pines are on the farm of Rev. Moses J. Jones, left, a South Muskegon SCD cooperator since 1941. That year the district tree nursery on the farm of Director Olaf Hostad, right, supplied the seedlings to Reverend Jones for the planting.

And one pine plantation now makes a scenic and profitable snowmobile trail.

Hostad sums it up this way: "Tree planting is by no means done. About 15,000 more acres need reforesting or interplanting. But we have come a long way. Serious erosion has virtually been stopped. Our people frequently express a sincere satisfaction in the many conservation accomplishments, and they will look to the districts for guidance in solving their conservation and mounting pollution problems. And last but not least, tax-delinquent lands in Muskegon County are nonexistent." ♦

Forest planted long ago is a conservation landmark

By William M. Clark
Woodland conservationist, SCS, Champaign, Ill.

In 1905, Alfred N. Abbott, troubled by the sight of erosion on his Illinois farm, wrote in his diary:

"This is mostly high rolling Mississippi River bluff land, very sandy—some portions consisting of drifting sand."

That year, he also began planting trees that now—65 years later—are the Abbott forest.

Howard Abbott, the youngest of the three Abbott sons, is the present owner and operator of the land. Since 1944, when the Whiteside Soil and Water Conservation District was organized, he has managed the farm according to a conservation farm plan.

Howard Abbott uses walnut from the farm forest to build grandmother clocks like this one.

At about the time the elder Abbott noted in his diary the condition of his land, he also appealed to the "Department of Forestry" in Washington, D.C. A forestry specialist helped draw up a plan, recommending a shelterbelt of cottonwoods on the west and Osage orange and white pine over the rest.

Alfred Abbott and sons Louie, Bayard, and Howard did most of the planting over a 7-year period. They added black locust, tamarack, maple, walnut, and hickory.

That first winter, Howard Abbott recalls, rabbits destroyed most of the white pine, Osage orange, and cottonwood seedlings. That meant replanting the next spring.

New varieties included that year were Norway spruce, ash, elm, cedar, catalpa, and hackberry. Abbott remembers that in a half-day they planted 1,800 white pine and 400 Norway spruce seedlings in the nursery plot. His father, in a diary entry dated May 5, 1906, recorded that they had planted 15,400 trees that spring.

Rodents — rabbits and mice — continued to give trouble. The Abbotts set out poisoned apples and put coal tar on the trees. But the damage went on.

As the forest grew, there were fires. The CB&Q Railroad crossed the farm. In dry times fires started from sparks from the locomotives.

But the plantation continued to grow. By 1930 the trees were advanced enough for checking of growth rates.

In 1940, the Soil Conservation Service and the Whiteside District began tours for school groups and others in the Abbott timber. The farm was gaining recognition as a conservation showplace.

The first true marketing of timber from the Abbott forest was in 1953 after a particularly damaging fire. Damaged trees were harvested. Salvaged logs were made into lumber at a hastily set up sawmill. The material obtained was enough for six buildings, including the one that houses the sawmill.

Later, Bayard Abbott began furnishing Osage orange lumber to an acquaintance in Memphis — for processing of police night sticks.

In 1969, Howard Abbott opened bids on walnut trees that Lloyd Casey, district farm forester, had marked for harvesting. A Kentucky firm bought the 40 trees for $3,150.

Almost every kind of tree planted by the Abbotts was chosen to some degree with its value to wildlife in mind. Food and shelter were principal concerns. The plantings were never considered as being suitable for deer, but deer nonetheless have become residents of the forest. They browse on brush and hide from hunters.

The Abbott brothers are proud of the conservation legacy left them by their father, whom they have always regarded as a pioneer. They say it was he who encouraged Frank O. Lowden, Governor of Illinois during World War I, to start conservation forestry in Ogle County, now the Sinissippi Forest.

The Abbotts hope that in time the land their father saved through his conservation efforts will be designated a state park or memorial in his name. ♦

Trees are for people

By Carrow T. Prout, Jr.
Chief forester, SCS, Washington, D.C.

If you are the owner of a woodland tract, the odds are four to one, the statisticians say, that you want no cutting of timber on your land. You want the woodland as it is for personal appreciation and enjoyment.

In consideration of this interest, as well as for the 3 million owners of forested land who grow trees for sale, the Soil Conservation Service long has clung to the view that trees are for people.

Forest industries and related in-industrial enterprises play an important role in the Nation's economy. Demand for the products of the forest increases each year. The per capita use of wood and wood products grows steadily as does the population.

Timber for a Nation

Two centuries ago most of this Nation was covered with virgin forests that helped feed, clothe, and sustain the native population, which then was the Indian. In New England about 80 percent of the land, except in Maine, had been cleared by 1770 for cultivation and for pasture.

In the colonies south of New England, trees were looked upon as the principal obstacle to growth. Lumber was the number one asset.

By 1870, the pasture and cultivated fields of New England had been abandoned as their owners moved westward. These abandoned lands produced a young and vigorous crop of white pine that, in another 30 years, would make white pine king and bring the center of the lumbering industry to the Northeast.

Forest lands for agriculture

To the West and South, forest lands still were being cleared for agriculture, for roads, and for the new cities and towns. The process of the Northeast was repeated in the South. In many counties more than 80 percent of the land was cleared for cotton, corn, tobacco, and peanuts.

Still another century of growth and development has passed. And perhaps in the decades ahead this Nation will see more drastic changes in the attitudes and use of forest lands than have occurred since settlement back in the 1600's.

In working with landowners throughout the Nation, the district

Trees are for people to walk among . . .

XUM

Trees make a house a home . . .

conservationists of the SCS frequently help district cooperators plan the use of their forested lands for personal needs and desires.

Trees, the conservationist knows, are for people. Trees are for everyone . . . to make an open field a park . . . to beautify a street . . . and make a house a home . . .

Trees slow the wind . . . settle the dust . . . buffer the raindrops . . . stop erosion . . . and hold the snow.

"Wolf tree"

What the conservationist once called a "wolf tree" may be the answer to a small boy's dream of the ideal tree to climb . . . or hang a swing in . . . or to bask in the shade of . . . or to get a kite caught in.

Trees are for people to walk among . . . for squirrels to hide in . . . and for hunters to stalk in. Trees are for people to look at . . . for birds to build nests in . . . and

Trees are to climb in . . .

And to pitch a tent under . . .

for bird watchers to peer into.

District conservationists of SCS know the kinds of trees that furnish the best nesting sites, the best food, and the best cover for birds and other animals that people watch and that people hunt. Provisions for leaving or growing these kinds of trees can be incorporated into the conservation plan. Standard woodland-conservation practices such as tree planting, woodland improvement, or woodland harvesting can be modified so that trees are left properly spaced to hang a hammock between . . . to pitch a tent under . . . or to have a picnic beneath.

SCS conservationists, who work with the cooperators of the more than 3,000 soil and water conservation districts of the Nation, now look at wooded lands in a new way. Trees are for people. And conservation plans may be tailored to make trees serve any needs and desires people may have. ♦

Trees are for hunters to stalk in . . .

And to build a nest in . . .

Trees are for everyone . . .

Quick work after a Nevada burn . . .

Grass and teamwork heal fire scars

By J. Boyd Price and William L. Dunning
Range conservationist, Reno, and district conservationist, SCS, Minden, Nev.

The fire that Sunday—July 28, 1968—escaped control in the hottest part of the day. Racing before a stiff breeze, it burned a house, split into prongs, and headed for Carson City from two directions.

As the flames approached the city, residents began to flee their homes.

Firefighters finally brought the fire under control. The townsfolk realized at once that they faced another potential disaster—flooding—unless the vegetation was restored. This was dry country—but on the east slope of the Sierra Nevada, rains can come in high-intensity downpours. Erosion and the deposition of sediment, the product of erosion, can be costly.

The fire had burned the plant cover from 1,600 acres of soils that are predominantly granitic and highly erosive on complex slopes and exposures. Further complicating the problem was the ownership pattern, 25 percent Federal and 75 percent private. Eleven private ownerships and two Federal agencies were involved.

Governor Paul Laxalt of Nevada proclaimed an emergency and appointed State Forester George Zappettini chairman of a rehabilitation committee. Representatives of the University of Nevada; Nevada Fish and Game Commission; Ormsby County; Carson City; Soil Conservation Service; Agricultural Stabilization and Conservation Service; Forest Service; Bureau of Land Management; and private landowners made up the committee.

Most private landowners with property in the burned area are cooperators with the Carson Valley Soil Conservation District. Lester Stodick, district board chairman, was asked to coordinate activities with the owners.

Planners decided on immediate aerial seeding to take advantage of the ashes for covering the seed, and then a comprehensive plan for effective permanent protection.

The Carson Water Company, a cooperator with the Carson Valley District and owner of the largest tract within the burn, contributed $2,500 for aerial seeding. Carson City, Ormsby County, the Nevada Division of Forestry, and the Bureau of Land Management contributed money and material to seed the entire area by helicopter. This work was completed within a week.

In the meantime, the planning committee worked out a rehabilitation program. Steps included:

A soil survey by SCS and the Forest Service, drill seeding of accessible areas, tree planting on suitable sites, and terracing and planting of critical slopes.

Soil Scientists Norman Bare of the Forest Service and Warren Archer of SCS completed a soil survey in record time. With this information the treatment was scheduled.

On March 25, 1969, SCS received an emergency grant of $5,000 for drill seeding the suitable soils and slopes. Snow was almost gone, so timing was critical.

The Carson Valley District was ready to take over the operation, in cooperation with the Carson City board of supervisors. Through their effective leadership and cooperation, equipment was on the site within a week.

Two crawler tractors owned by the Carson Valley District were hitched to drills furnished by the Bureau of Land Management. Tractor drivers were under the supervision of the Carson City Engineering Department. Carson Valley District Equipment Manager John Indiano kept the equipment rolling with the help of Ormsby County Roads Superintendent Jack Butti. SCS provided technical assistance.

Part of the area now known as the Carson burn. Drill rows of Nordan desert wheatgrass are returning stability to the denuded slopes.

XUM

The burned stumps of Anderson Peachbrush and wild rose were just right for puncturing tires on the rangeland drills, but 10 days and twice as many flat tires later the job was done.

Topar pubescent wheatgrass was seeded on the better soils, with Nordan desert wheatgrass on the remainder. Good soil moisture at seeding time and an early June storm were favorable. An excellent stand of grass emerged. Landowners helped by keeping livestock off the seedings.

City residents got into the act. Four thousand Ponderosa pine seedlings were obtained from the Nevada Division of Forestry and planted by the service clubs of Carson City. This project, known as "Operation Pine Plant," was accomplished with the help of 4-H clubs, Scouts, and high-school volunteers.

As a final step, 87 acres of very steep land was contour-trenched and seeded to Siberian and crested wheatgrass by the Nevada Division of Forestry. Technical guidance from the Toiyabe National Forest staff was used to treat the lands too steep for ordinary measures. The access road and 10 additional acres were stabilized. The job was completed in November 1969, 16 months after the fire.

Outstanding cooperation from all individuals and organizations turned a complex situation from a potential disaster to a successful conservation feat. Some of the watershed already looks better than before the fire. A few more years will make a great deal more difference. ♦

Gravel and grass . . .

Mound systems aid in sewage disposal

Many families in the Clark County Soil Conservation District in central Wisconsin live in areas of nonpercolating soils—where septic tanks can't work right.

The answer to a mounting pollution problem may lie in a system developed by Soil Conservation Service specialists working with local officials. It's a gravel mound topped by a layer of soil and grass, a sort of septic tank above ground.

Since few homes in the area are served by municipal treatment systems, many families have had to rely on septic tanks—and effluent coming up to the surface or fouling ground water has been commonplace. A recent survey showed that an average of 27 septic tanks per township were draining directly into roadside ditches. One family was emptying sewage into an abandoned well, an almost certain source of ground-water contamination.

The problem was mounting. Communities were becoming increasingly aware of pollution and the accompanying disease threat. Dairy farmers with inadequate disposal systems were having trouble obtaining Grade A milk certification. And a new Wisconsin law prohibited building on nonpercolating soils where municipal sewage-treatment plants were not available.

State authorities proposed sewage-holding tanks for families without city sewage service or functioning septic tanks. Although some mobile home communities are using this technique, costs for individual families were prohibitive.

District Conservationist William Ludwig of the Soil Conservation Service, County Agricultural Agent Arvin Dopp, and County Zoning Administrator Earle Smith went to work on a solution that would be economical and practical. They decided the best way to overcome the difficulties would be to build septic fields above ground.

Their plan, developed after consulting with SCS engineers, was to use a mound of gravel covered by a layer of fill earth planted to grass. They had learned that a similar system had been developed by the U.S. Department of Health, Education, and Welfare for an area in North Dakota (described in the *Manual of Septic Tank Practice*, an HEW Public Health Service publication). Features of this "Nodak mound system" were adapted by the Clark County team.

In installing the mound system, the site is dug out to a depth of 1 foot. A layer of gravel or sand is placed in the excavation, and perforated tile lines are placed, with a covering of washed rock or gravel.

The bed is covered by sand or gravel and topped with fill dirt. Grass growing in this soil draws liquids through the filter bed and removes them by evapotranspiration. This process is essential, Ludwig and his associates explained, to keep the field from filling with trapped liquids.

The mound must be carefully seeded and the grass cover mowed frequently.

A typical mound is 25 by 60 feet and about 3½ feet high.

A modification involves the laying of two sets of lines, one near the surface to take full advantage of summer functioning of the grass and the other deeper to avoid freezing in winter.

Ludwig reports the cost of the above-ground installation is about $1,000. State officials have approved the system's use only on an experimental basis, but the installations—the first built over a year ago—appear to be doing a safe, efficient job.—FRANK CROSS, *Information Division, SCS, Washington, D.C.* ♦

Conservation in action . . .

Wood crop gains in Kansas

Timber—black walnut in particular—is gaining in importance as a crop in eastern Kansas.

In the Elk County Soil Conservation District, for example, is 15,000 acres of commercial timber, most of it in fertile valleys. Forty landowners in the district have given attention in the last 3 years to improving their wood crops in quantity and quality.

Bur oak, American elm, hackberry, green ash, and black walnut are the main species.

Tree farmer Earl Thornton set out 3 years ago to improve his black walnut timber stand on the 160 acres he owns in Elk County. Soil Conservation Service and Extension Service specialists helped Thornton develop his timber-stand improvement plan.

One phase of the plan was girdling weed trees, such as elm, Osage orange, and black locust. Wild grapevines were cut to prevent damage to the walnut stand. Thornton planted 100 black walnut seedlings and planted stratified black walnut seeds in open spaces to fully stock the stand. The stand is now growing at a rate of about 175 board-feet per acre per year.

Roy Robertson, with 10 acres of native hardwoods on his 600-acre farm, improved his timber stand early in 1970. He takes time from his business in Wichita to cut weed trees, chop vines, plant trees, and carry out other woodland-improvement practices.

Demand for most Kansas hardwoods for veneer, wallboard, and furniture construction is increasing. More Kansas landowners are considering wood as a commercial crop each year.—F. DEWITT ABBOTT and GLEN SNELL, *state resource conservationist, Salina, and district conservationist, SCS, Howard, Kans.*

Earl Thornton estimates growth of walnut tree.

Nebraska

Phone cable exposed, SCS gets the call

Everybody knows underground telephone lines are supposed to stay buried. They don't always. In open country, wind and rain can dig them up—given a chance.

Landowners Stanley Jaiser and John Pollard in Dodge County, Nebr., learned what can happen when an eroding water runoff channel and a buried cable intersect. They handled it by getting the right people on the phone.

One of American Telephone and Telegraph's transcontinental cables passes through the two farms just above the junction of two waterways. Concentration of runoff had created an ugly gully at that point, but doubt about the solution had delayed action on the problem.

When it was discovered the problem involved not only farmland but also a costly telephone installation, the need for action became urgent.

Engineers of the Soil Conservation Service produced the solution. They recommended a steel-lined mechanical spillway to get the runoff water downhill. The combined grade control-detention storage structure not only stabilizes the eroding land, but also gives flood protection to 300 acres below.—LEROY O. KRAMER, *district conservationist, SCS, Fremont, Nebr.*

Michigan

Lawn instead of gullies

When Rev. and Mrs. Kenneth Oster moved into their new home near Cedar Lake, Mich., last fall they found themselves surrounded by some serious soil erosion problems. They called on the Soil Conservation Service for help.

Although the house had been built 4 years earlier, the front and side yard had not been properly graded or seeded. Heavy runoff from snows and rains of 1969 had carved huge gullies in the yard and a 15-foot high bank that falls off to a small creek. With winter coming on, the bare soil was a target for even greater destruction.

After checking the site, SCS Conservationists John Young and I drew up a plan to stabilize the area with grass and prevent further erosion. It called for regrading the steep bank to a more gentle grade and constructing a diversion to prevent excess water from flowing over the bank. This required a dragline and bulldozer. A seedbed then was prepared and a heavy application of fertilizer applied. The area was seeded to a mixture of red fescue and ryegrass, which will require relatively low maintenance. Part of the area, to be used as lawn, was hand-sodded and seeded.

The Osters, no strangers to tedious hand labor, did the hand work

Rains caused gullies and rills.

The Oster's front yard takes on a new look.

and seeding themselves. As missionaries for the Seventh Day Adventist Church, they had worked at similar tasks for 20 years in far-off Iran.

Reverend Oster is pastor at Clare and Mt. Pleasant churches, and his wife teaches at Cedar Lake Academy.

They have further plans for their 15-acre property, including a wildlife pond and woodlot-improvement work.—JACK D. LAKE, *district conservationist, SCS, Stanton, Mich.*

Ohio

SCS plays role in community's plan

Residents of Woodville, Ohio, are proud of their achievement in what they regard as "community conservation."

The Soil Conservation Service had a part in it.

When the town set out to build a new swimming pool in its community-conservation program, officials asked the Sandusky Soil and Water Conservation District for information on the flood plain of the Portage River. Hydrologic and soil information was made available by SCS, enabling architectural consultants to locate and design the pool.

The community also wanted a low dam on the river to impound enough water to allow boating and improve fishing. The SCS provided information on topography, soils, and hydrology. The information was used by a consulting engineer in the design, plan, and specifications for the dam.

The community also cleaned up a mile of the river's course through the area and began work on a new sewage system. A larger library and historical museum were a part of the improvement program.

In its assistance to Woodville in building a better community, the SCS team worked with the Woodville Recreation Board, headed by Sanford Price, and with the Library-Museum Building Committee, directed by Mrs. Ruth Judd.—JOHN E. BATTLES, *district conservationist, SCS, Fremont, Ohio.*

New York

Community links golf with economy

Recreation development, along with the fun it offers to a community, can mean a quickening of the economic pace of the area as well as adding a pleasing touch or two to the countryside.

Citizens of Ulster County, N.Y., worked together—with timely help from the Ulster County Soil and Water Conservation District and the Soil Conservation Service—to produce what they acclaim as "the most beautiful golf course between New York City and Albany."

They've found that the attractive 6,500-yard course will mean an income of more than $62,000 annually, with $58,000 turned back into the community in the form of salaries and expenditure for utilities, equipment, and maintenance.

The course is a segment of the Rondout Pool, Golf, and Tennis Association's complex. It lies between the majestic Catskill and Shawangunk Mountain ranges. The soil is mostly silty clay loam, except for the highland where clubhouse and pool are on deep sand.

Designing ponds was one part of SCS's role in planning and development of the 18-hole course. One of the ponds is near the top of a promontory from which every hole is visible. Four other water hazards were developed.

One of the trickier parts of the conservationist's job was coordinating the ditching with the laying of irrigation pipes and construction of fairways and greens. The plan calls for 7,500 feet of tile.

SCS specialists, whose assistance in recreation developments is more and more frequently sought, are working in the Ulster County area on many recreation improvements for community benefit, such as town parks and beaches. Public officials sponsoring the improvements generally agree that these projects not only meet the outdoor recreation needs of residents but also provide jobs, produce tax revenues, attract new business, and enhance their community's natural beauty.—FRANCIS E. MULVANEY, *district conservationist, SCS, Kingston, N.Y.*

Wisconsin

Tribe invites settlers to lake homesites

For nearly 10 years George Kenote dreamed of a lakeside settlement for his fellow Menominee Indian tribesmen in Menominee County, Wis.

The dream now is a reality. Fifty new homes already have been built at "Lakes of the Menominees" north of Keshena, out of 2,400 homesites planned and 950 sold.

As vice president for land use and development of Menominee Enterprises, Inc., Kenote knew the people and the sources of help. He called on them.

In the "dreaming" stage he talked over the problems and opportunities with Soil Conservation Service personnel assisting the Menominee Soil and Water Conservation District. Basic soils data, engineering specifications, and water-yield facts came out of this inquiry. SCS later assisted in erosion control, bank stabilization, mulching, and critical-area seeding work done by contractors. A request to the Economic Development Administration brought funds for an economic study.

At a public hearing in 1967 the proposal was approved to sell the lots instead of leasing them. Attorneys, real estate people, and private engineers took part. The Wisconsin Public Service Commission granted a permit to build dams to create the lakes. Local contractors were engaged for construction.

"Lakes of the Menominees" is now a partnership project between Menominee Enterprises and a firm of developers and builders. In the project, Legend Lake has 1,340 surface acres. It will offer swimming, boating, water skiing, fishing, and picnicking for local people and visitors as well as residents.

About half the lots have water frontage. The others have access to water through common-use parks and boat landings provided for offshore property owners. A third of the development area is to be retained in its natural condition for wildlife and open space. Zoning regulations control the use of the entire area.

It is estimated that the tax base in Menominee County will increase from $19 million to $40 million. Fifteen new businesses already have been established. Operation of the lakes and their new enterprises provides full-time employment for 32 local residents. The economic effect of this project is regional. It provides substantial new cash flow to surrounding communities.

Conservation enters the "Lakes of the Menominees" project in its finest role as an aid to sound planning for the use of resources. The well conceived and executed project will contribute greatly to a sound economic base for Menominee County.—HERBERT W. TAUCHEN, *district conservationist, SCS, Shawano, Wis.* ♦

Tennessee

Hunting farm pays in fun

When Ralph Morton retired in 1968 after 30 years in the investment field, he formed a partnership with Henry T. Bunn of Memphis for a hunting development.

They bought 275 acres on Kentucky Lake in Henry County, Tenn., and set out to make it a "hunter's paradise."

"It was no mistake," he reports, looking back. " I'm having the time of my life."

His first step was to become a cooperator with the Henry County Soil Conservation District. "I had ideas of my own, but the district arranged for the Soil Conservation Service to give us the fundamental help we needed early in the game. When you are planning to attract waterfowl, water is what you need —especially water where ducks and geese can feed."

The SCS crews surveyed a 3-acre lake and several small ponds, including feed ponds for ducks. Morton planted crops of corn, milo, and other feed in the ponds in summer and flooded the areas in fall.

In 1969, bobwhites, chukars, and pheasants were raised and released. Morton placed feeders over the area to encourage the birds to stay and to keep them in good condition.

Harvesting is a planned part of the enterprise. Shooting pits face Kentucky Lake on the expected route of the waterfowl.

Will the hunting project pay? Morton expects it to. Hunting last year was exceptionally good.

But earnings are only a part of his interest in making it go.

"When my friends spend time and money to come here to hunt, I want them to have the best recreation of this type than can be found anywhere."

For Morton, the enterprise is already paying its way in great personal satisfaction.—GLEN S. ELKINS, *district conservationist, SCS, Paris, Tenn.*

Ralph Morton, right, and the author are examining milo.

Meetings . . .

Foresters discuss trees and environment

AFA

The 95th annual meeting of the American Forestry Association will take place October 4-7 in Atlanta, Ga.; theme is "Trees for a Quality Environment."

Timely topics include "Trees Don't Vote—People Do," "The Third Forest," "Trees for People," "A Farmer Looks at Forestry," "Youth Looks Ahead," and "TVA and the Environment."

Planned trips include the Piedmont National Wildlife Refuge, Georgia Forestry Commission, and the Fire Research and Seed Laboratories.

SAF

The Society of American Foresters will hold its annual meeting October 11-15 in Las Vegas, Nev. "Managing Environment—Role of Resource Professions" will be the theme of the meeting. Two subthemes are "Awareness and Commitment" and "Expertise." Topics to be discussed include "The Environmental Crusade in Perspective;" "Awareness of Problems, Alternatives, and Costs;" "Selection of Environmental Goals and Commitment;" "Designing the Environment;" "Enhancing Environment Through Science and Technology;" and "How Land Managers Use Resource Professions."

Engineers strive for better environment

"A Better Environment for the Metropolitan Area" is the timely theme of the American Society of Civil Engineers' annual meeting, October 19-22, New York, N.Y.

Among the many problems to be discussed are: Divided authority and responsibility for improving the physical aspects of our urban areas (among several states, hundreds of local governmental units, public authorities, and the Federal Government); great disparity between tax revenues and funds needed to provide essential services; public resistance to programs designed to achieve the needed improvements; and lack of action-oriented plans for effective efforts to overcome environmental problems.

Program topics include: "Sewage," "Solid Waste," "Clean Air," "Water Supply and Treatment," "Utilization of Marginal and Man-Made Land," "Coastal Zone Management Related to Urban Development," and "River and Ocean Engineering."

Federation all out to reduce pollution

With the New England Water Pollution Control Association acting as host, the 43d. annual conference of the Water Control Federation will take place October 4-9 in Boston, Mass.

Topics such as "Viewpoints on Enforcement in Water Pollution Control," "Industrial Waste Case Histories," "Combined Sewer Overflows," "Oil and Pollution Prevention," "Regional Management of Wastewater Utilities," "Collection Systems Operation and Maintenance," "Ultimate Sludge Disposal," "Industrial Wastewater," "Estuaries and Coastal Waters," "Process Equipment Developments," and "Advanced Water Treatment," will be discussed. Several research symposia and operators forums also will be held in the concurrent sessions.

On October 7, designated as Industry Day, the National Council of the Paper Industry for Air and Stream Improvement, Inc., and the American Electroplater's Society will meet to discuss their particular problems.

Biology teachers to revolutionize biology

"Revolutions in Biology" will be highlighted at the National Association of Biology Teachers' convention October 21-24 at Denver, Colo.

Subjects to be presented in the general session are "Population Biology," "Molecular Bases of Energy Conversions in Photosynthesis," and "Biology Teaching in the 70's." Technique sessions will involve such subjects as "Membrane Microfiltration for Biology," "Curriculum Development," "Audio-tutorial," and "The School-Science Coordinator in Higher Education."

Dates and places

October 4-7, American Forestry Associaton, Atlanta, Ga.
4-9, Water Pollution Control Federation, Boston, Mass.
4-9, International Union of Biological Science, Washington, D.C.
7-10, National Conference of Editorial Writers, Boston, Mass.
10-14, American Bankers Association, Miami Beach, Fla.
11-15, Society of American Foresters, Las Vegas, Nev.
12-16, Future Farmers of America, Kansas City, Mo.
17-21, American Institute of Planners, Minneapolis, Minn.
18-21, American Chamber of Commerce Executives, Pittsburgh, Pa.
19-22, American Society of Civil Engineers, New York, N.Y.
21-24, National Association of Biology Teachers, Denver, Colo.
22-24, Association of Engineering Geologists, Washington, D.C.

November

5-6, American Forest Institute, Washington, D.C.
5-6, Keep America Beautiful, Inc., New York, N.Y.
8-11, National Association of State Universities and Land Grant Colleges, Washington, D.C.
8-11, National Forest Products Association, Dallas, Tex.
9-11, National Grange, Boise, Idaho.
10-13, American Association of State Highway Officials, Houston, Tex.
11-13, Geological Society of America, Milwaukee, Wis.
18-20, National Water Resources Association, Las Vegas, Nev.
24-Dec. 1, International Commission on National Parks, New Delhi, India.
27-29, National Association of Farm Broadcasters, Chicago, Ill. ♦

XUM

Review

Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health, Parts I and II. *(1969). U.S. Department of Health, Education, and Welfare.* 677 pp. *$3.*

The commission's 14 unanimous recommendations and summaries of the five subcommittee reports make up part I of 37 pages. Part II includes more than 5,000 references in eight chapters as well as the detailed reports of subcommittees and panels. The sheer size of this report makes any brief review inadequate from the standpoint of subject matter.

The introduction states that "Our society has gained tremendous benefits from the usage of pesticides to prevent disease and to increase the production of foods and fibers. Our need to use pesticides and other pest control chemicals will continue to increase for the foreseeable future. However, recent evidence indicates our need to be concerned about the unintentional effects of pesticides on various life forms within the environment and on human health.

"After carefully reviewing all available information, the commission has concluded that there is adequate evidence concerning potential hazards to our environment and to man's health to require corrective action. Our Nation cannot afford to wait until the last piece of evidence has been submitted on the many issues related to pesticide usage. We must consider our present course of action in terms of future generations of Americans and the environment that they will live in.

"The field of pesticide toxicology exemplifies the absurdity of a situation in which 200 million Americans are undergoing life-long exposure, yet our knowledge of what is happening to them is at best fragmentary and for the most part indirect and inferential. While there is little ground for forebodings of disaster, there is even less for complacency. The proper study of mankind is man. It is to this study that we should address ourselves without delay."

There are 14 unanimous recommendations by the commission. They point to the urgent need for more research and for better cooperation and communications between and within Federal departments as well as internationally. They set forth clearly the need to develop standards and regulate the use and distribution of pesticides. Recommendation 3 devotes special attention to DDT and DDD. All uses of these pesticides should be eliminated within 2 years unless the uses are considered to be "essential to the preservation of human health or welfare and approved unanimously by the Secretaries of HEW, Agriculture, and Interior."

Most chapters in part II cite references; but chapter 3, dealing with the effect of pesticides on nontarget organisms other than man, does not —appending only a selected bibliography. There is no index, and the reports contain contradictions, resulting occasionally from varying interpretations of the same scientific papers. In all the thousands of papers and books cited or listed, Rachel Carson is not mentioned.—WILLIAM R. VAN DERSAL, *deputy administrator for Management, SCS, Washington, D.C.*

Representative and Experimental Basins, an International Guide for Research and Practice. EDITED BY C. TOEBES AND V. OURYVAEV. *1970. UNESCO (distributed by UNIPUB, Inc., P.O. Box 433, New York, N.Y. 10016). 348 pp. $10.*

This book, No. 4 in a series, is a contribution to the International Hydrological Decade. It is written for persons engaged in hydrological research or having a hydrology background. It is a descriptive, mathematically oriented book that may demand more of the reader than a knowledge of the use of symbols and logical reasoning.

It will be published in English, French, Russian, and Spanish editions. The 52 contributors represent all major countries; many are listed in *Who's Who, Biographies of Living Notables.*

There are six chapters with a total of 525 references (1,225 entries). The preface contains a brief historical description of the International Hydrological Decade (IHD), 1965-74. Chapter 1, "Introduction," has an outstanding "Scope and Purpose" followed by 126 terms in a section entitled "Terminology". Chapter 2, "Selection and Organization of Basin Networks," covers the first step in any study. Proper expertise here can avoid future problems. The underdeveloped countries could be at great disadvantage in this and instrumentation phases. Chapter 3, "Planning of Observations According to the Research Objectives," covers the usual hydrologic subjects. Chapter 4, "Methods of Observation and Instrumentation," is the real meat of the book—it has 120 pages with numerous tables, photographs, and sketches. Chapter 5, "Data Processing and Publication," contains basic methods found in the developed countries. Chapter 6, "Analysis Techniques and Interpretation of Research Results," is for the expert analyst. Few laymen will enjoy this chapter, and even the "experts" will disagree on the interpretations.

The guide should be considered a good source book on systems hydrology and a first step to modern development. For a UNESCO paperback, the price is a bit inflated.—W. H. SAMMONS, *hydraulic engineer, SCS, Hyattsville, Md.*

Natural Principles of Land Use. BY EDWARD H. GRAHAM. *(1944) 1969. Greenwood Press, Westport, Conn. 274 pp., illus. $13.50.*

This book has had a significant

XUM

and far-reaching effect on natural resource programs and is a familiar landmark to ecologists the world over. Its reissuance after many years out of print will be welcomed by serious students of the environment. It was originally published in 1944 by Oxford University Press.

The late Dr. Graham was formerly an assistant chief of the Soil Conservation Service and in the years immediately preceding his death made many important contributions to the work of the International Union for the Conservation of Nature.

An Economic Evaluation of the Great Plains Conservation Program. By James Kasal and W. B. Back. *1970. USDA Economic Research Service ERS 440. 41 pp., illus.*

In the mid-1950's, as one of the most severe droughts in Great Plains history was in its final throes, agricultural leaders of the Nation proposed a somewhat different approach to solving problems of the land.

The program, which Congress authorized in 1956 as the Great Plains Conservation Program (Public Law 1021), offered Federal cost-sharing and priority technical help from the Soil Conservation Service to enable farmers and ranchers of the vast area to get needed conservation on their land as quickly as their own resources would permit.

In a few years Plains landowners, though slow at first to commit themselves to a program in which they were required to sign a contract with the Secretary of Agriculture, began to apply for help faster than appropriate funds would permit.

By the mid-1960's the Soil Conservation Service, believing that the increasingly popular program merited objective appraisal, arranged with the Economic Research Service to make a study to show whether early achievements would warrant extending the program beyond its projected termination date, 1971.

The ERS chose 14 counties in the Plains—nine in northwestern Kansas and five in northeastern Colorado—and questioned 153 participants in the program and 217 nonparticipants.

The survey showed:

Owners of larger land units tended to outnumber others in the program. Participation was higher among full owners, and income of a majority was higher than the income of the average nonparticipant. Participants were a little younger, on the average and had more schooling.

Among reasons nonparticipants did not make use of the program were too many restrictions or an aversion to long-term contracting, belief that the program did not meet needs, and an insufficient understanding of the program.

One in five participants said his main interest in the program was to reduce soil erosion. One in seven wanted to increase his water supply or use water more efficiently. Increasing livestock operations, reducing farm workload, and improving wildlife habitat were among other reasons.

"More than two-thirds of the participants," the report said, "believed that the program had decreased soil erosion, reduced risk due to extreme weather hazards, and increased the water supply, the efficiency of water use, and the value of the land they operated."

The report contained few surprises. In fact, the Nation's agricultural leaders—and Congress—had already been convinced of the soundness of the program's structure and objectives. The program last year was extended by Congress, with several improvements, until December 31, 1981.—Norman A. Berg.

New publications

A New Prospect. By Louis T. Kardos. *1970. (Reprinted by permission from Environment, copyright 1970, Committee for Environmental Information.) Environment Vol. 12, No. 2, March, pp. 10-27.* Story of Spring Creek and the beautiful Nittany Valley of Pennsylvania. Dumping of chlorinated effluent in the creek, drawing large amounts of water from the ground-water reservoir, throwing natural fertilizer into the water, and introducing inorganic minerals onto the land caused the deterioration in that area. Experiments were conducted to transform sewage-waste water into usable water by first treating it, then sprinkling it on crop or forest land. The water seeps through the ground and is diluted by ground water. Nutrients from the sprinkler waste water are drawn into the plants and carried off with harvested crops such as hay, or, in the forest the nutrients from the waste water are cycled and recycled through the trees, other vegetation, and the forest floor.

Organization and Development of the Soil Conservation Service. Compiled by Robert L. Geiger, Jr. *Rev. 1970. USDA Soil Conservation Service SCS-CI-13. 30 pp.* Presents in detail Public Law 46 creating the Soil Conservation Service, and gives chronologically the organization and some outstanding events from the beginning of SCS to the present.

Proceedings of the 1970 Sprinkler Irrigation Technical Conference, Denver, Colo. *1970. Sprinkler Irrigation Association. Washington, D.C. 109 pp. $8.* Contains 15 articles on water conservation and sprinkler irrigation written by specialists in the federal and state governments, universities, and private industry.

USDA, A Guide to Understanding the United States Department of Agriculture. *Rev. 1970. USDA Office of Personnel. 36 pp., illus.* A short history of the Department beginning in 1839 and presenting the functions of various USDA agencies in graphic form.

Why Improve Channels? *1970. USDA Soil Conservation Service. 6 pp., illus.* Tells how restoring streamflow capacity of small channels can help reduce flood damage, stabilize streambanks, and improve esthetic values. Relates channel improvement to the combination of conservation practices on the land and the system of floodwater-retarding dams and multipurpose reservoirs that make up the small watershed program under Public Law 566.

Soil surveys

Wells County, North Dakota. By J. B. Seago, M. Robert Wright, C. Howard Wiesner, and Ralph S. E. Smith. *1970. 84 pp., illus.; maps 3.17 inches to the mile (1:20,000).*

Recon . . .

The Nation's first ordinance banning the sale of throwaway bottles was passed in Bowie, Md., on July 20. Only returnable bottles of soft drinks, beer, and ale will be sold within city limits beginning next April. Testimony included such remarks as: "We're for a clean environment but this is the wrong way to go about it." (two local businessmen) "I hope that other jurisdictions will follow the lead of Bowie in passing such an ordinance . . . let's deposit the no-deposit philosophy in the trash can." (county planning commissioner) "The question is not whether we shall curb our convenience, but how drastically we shall do it and when. I suggest that a little inconvenience now may well preclude a much greater one later." (former city councilman) Representatives of several national beverage and container manufacturers failed to convince council members to wait for industry to cope with its role in the solid-waste situation.

A Kansas contractor is mining freshwater fish and fun on 400 acres of land scarred by the search for coal. Although he is not a fisherman, W. J. "Red" Fox of Girard, Kans., has developed a recreation area that offers sportsmen a number of choice spots and species. Roads connect dozens of pits in the mine-dump area that Fox has been restoring for several years. Varying terrain and soil conditions made the tract an excellent area for training machinery operators. The retired contractor's winter and weekend development is a pilot project intended to show local leaders what can be done.

"Operation Saturation" is underway in Haywood County, Tenn. Willie M. Moore, soil conservationist, and Theodore Giles, county vocational agriculture instructor, have started a cooperative, countywide "seek and assist" program. They want to be sure that all minority-group farmowners know and understand the SCS services that are available.

Converting a deserted farm to a botanical garden for Yakima, Wash., is the aim of the Hi-Land (Wash.) Soil and Water Conservation District and Yakima Garden Clubs. SCS is providing technical assistance in leveling and shaping the land; designing the irrigation-drainage system; and planting ornamental trees and shrubs. Two of an eventual 60 acres will be planted to all varieties of fruit trees grown in the Yakima Valley.

Pollution down on the farm

"In the last analysis it is the agriculturist's own environment that is likely to receive the greatest harm, since effects are usually greatest near the source. In the Midwest, where heavy and frequent applications of nitrogen are the rule and where animal herds are concentrated in small areas, examples of serious damage to both surface and ground-water resources abound . . . The implications of these statements may seem staggering to an agriculturist already burdened with new products and practices, but the consequences to him may not all be negative. After all, animal feeds, fertilizers, and pesticides purchased and applied by him but not taken up and fully used in the production process represent a loss of time and money. Thus, prevention of environmental contamination may in many instances be synonymous with greater efficiency of production."—R. T. OGLESBY, *Department of Conservation, Cornell University, Ithaca, N.Y.*

Basic provisions of state strip-mining laws—especially reclamation requirements—have been summarized by the National Coal Association. Summaries contain briefs of laws in force for 18 states as well as federal regulations for surface mining and reclamation on Indian public land. The association keeps the collection current by adding new or amended statutes as state governments act in this area. For further information regarding copies of the summaries, contact the Soil Conservation Society of America, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021.

Seven out of 10 Americans say that air and water in their communities are contaminated, according to a recent Harris survey. Since 1967, the number of persons in a national cross section of households who consider local pollution a serious problem has increased from 56 to 70 percent. A clear majority (53 percent) of the public feels that the situation is worse.

Conservation begins at home

But all of the awareness that you and I may have about environmental problems is of little worth unless we do something about it. Start from the top. Pick the first thing concerning quality of your surroundings that comes to your mind . . . Eliminate your own insults to the environment . . . Starting your environmental campaign at home should prepare you with a clear conscience to tackle bigger projects. You will be in a better position to cast the first stone somewhere else once you've brought your own setting into line.—KARL F. LAGLER, *professor of fisheries and zoology at the University of Michigan, Ann Arbor, to ENACT—a group of students, faculty, and citizens created at U-M to conduct environmental teach-ins and information programs.*

Expendable environments

"The American way has been primarily pragmatic, and unfortunately this can be translated as piecemeal in respect to the environment. Freedom of the individual to locate a development or business wherever he saw a good spot may have been cherished in the past, but urbanization and development have proceeded to such a point in some parts of the Nation—particularly the Eastern States—that most available sites for expansion into 'expendable environments' have been used up.'—DAVID D. DOMINICK, *commissioner, Federal Water Quality Administration.*

XUM

From the Administrator:

Putting plants to work

Architect of the environment!

Can you think of a more fitting name for the soil and water conservationist, whose skills with plants and landforms make the world around us more useful, more stable, and more pleasing?

Of all the tools at his command—and he may call upon many—the grasses, shrubs, and trees are basic in his day-to-day work.

Most of the plants he uses play multiple roles—in holding the earth in place, furnishing food and shelter for animals, contributing to the economic stability of man and his community, repairing damaged land and improving its usefulness, and presenting a more comfortable and attractive environment.

Shaping the earth with machinery and building dams and other structures are other important elements of complete resource conservation. But the success of these engineering feats hinges on the efficiency with which plants carry out their assigned tasks of safely and attractively blending the new construction into the landscape.

Plants in the conservationist's toolbox have been assembled from many corners of the world. Some others right at home, once overlooked, have become Cinderella performers in conservation.

Through the slow and painstaking process of trial and selection, the discovery of species and their capabilities has gone on.

The process has produced trees for erosion control, for wildlife shelter, for mined-land restoration, and for farmstead protection . . .

Grasses for protection of roadsides, for dependable grazing, for control of beach sands, for filtering wastes to protect water quality . . .

Shrubs for wildlife food and habitat, and for special jobs in erosion control . . .

In the course of it all, observation and lengthening experience of the Soil Conservation Service and cooperating agencies have brought new techniques for planting, cultivation, and greater usefulness.

By matching our mounting knowledge of soils with the needs and performance of plants, we have built a valuable fund of resource information. For special duty in a salty expanse in the Southwest, for controlling active dunes around the Great Lakes, for improving the tilth of a depleted soil in the Southeast, SCS conservationists can offer the kind of plants needed, information on getting a stand, required care and maintenance, and even instructions for harvesting seed.

It has been a vital part of our work to amass materials and knowledge through our plant materials centers and to keep them readily available. It has been an important role of local conservation districts to aid in both collecting and applying the materials and knowledge.

In recent decades, development of huge machinery for reshaping the earth's surface has made services of the trained conservationist a matter of even greater urgency. The need for quick-growing plants to hold the soil of a housing development, an airport, or a new highway during the months of construction has placed demands of a new and broader dimension upon him. His knowledge of the usefulness of certain plants for special jobs, in particular soils, and of the care and feeding required has stood the test. Yet he must constantly seek to learn more.

Even the man or woman troubled by sensitivity to the pollen or presence of certain plants may have cause to thank the conservationist for a degree of relief. Conservation plantings tend to crowd out unwanted species and keep them out.

The world of plants is an exciting one and through the conservationist a source of better things for mankind.

Kenneth E. Grant

UNITED STATES
GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D. C. 20401

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

JAN
UNIVERSITY MICROFILMS
SERIALS SECTION
300 NORTH ZEEB RD.
ANN ARBOR, MI 48106

TAGE AND FEES PAID
ERNMENT PRINTING OFFICE

If your address changes, please notify us of your complete new address, including Zip Code number, and include old address with our code number as shown above.

A home in the woods

The Allen Carlsmiths of near Amherst in New Hampshire are very close to their goal—home as near to nature as they could have it.

They chose the hillside site on a 60-acre tract of mostly woodland and designed the building to blend in subdued harmony with the landscape. In the dining room you have the feeling of still being outdoors with bird and animal neighbors a nodding distance away.

As Mrs. Carlsmith explained it, she and her husband have tried to become a part of the natural setting rather than to change it.

The Carlsmiths have been working on their project for years, but only recently discovered the assistance available through the Hillsborough County Conservation District. They have become district cooperators and are going about their planning with technical help of the Soil Conservation Service.

The plan calls for a nature trail leading from the house, past a pond, and back. The sight of deer in the horse pasture is a recurring thrill, and excitement attends the furtive visits of squirrels, raccoons, and chipmunks.

Mountain laurel decks the hillside in splendor in June. And Mrs. Carlsmith delights in the wintergreen smell of the black birch, the irregular branching of the oaks, and in the dramatic patterns of the white birch with its papery bark.

The tract was logged a generation back, but not severely. Some of the larger trees remained. Carlsmith removed some selected trees to permit fuller development of the laurel and to allow more sunlight in the home. He and Mrs. Carlsmith are not interested in selling wood products, although they know that as long as the trees grow they are producing wood.

Future generations may need to harvest some of the wood. For the present tenants, the Carlsmiths, the enjoyment of living in the woods is far more important.—ROBERT E. GREENLAW AND MORSE L. BROWN, *woodland conservationist, SCS, Durham, and soil conservationist, SCS, Milford, N.H.*

To help fit her home into the natural landscape, Mrs. Carlsmith made the conservation plan she is discussing with Morse Brown of SCS.

XUM

XUM